

CLAIMS

- 1 1. A power amplifier system comprising:
2 a plurality of amplifiers, each of which includes a differential input that is commonly
3 coupled to a system input port, and each of which includes a differential output;
4 a plurality of primary transformer windings, each of which is coupled to the differential
5 output of one of the plurality of amplifiers; and
6 a single secondary transformer winding that is inductively coupled to all of said primary
7 transformer windings and which provides a system output port to which a load may be
coupled.
2. A power amplifier system as claimed in claim 1, wherein said each of said primary
transformer windings provides at least substantially the same number N of winding turns so
that the turns ratio from each primary transformer winding to the secondary transformer
winding is $N:1$.
3. A power amplifier system as claimed in claim 2, wherein the current provided by each
amplifier is $i_1 = i_2 / (mN)$ where i_2 is the current in the secondary transformer winding, and m
is the number of the plurality of primary transformer windings.
4. A power amplifier as claimed in claim 2, wherein each of said primary transformer
windings provides exactly the same number N of winding turns.
5. A power amplifier as claimed in claim 2, wherein said system permits mismatch in the

2 number of turns of each of said primary transformer windings.

1 6. A power amplifier system as claimed in claim 1, wherein said plurality of primary
2 transformer windings are spatially distributed on a circuit board to reduce localized heating on
3 the circuit board.

1 7. A power amplifier system as claimed in claim 1, wherein system includes two primary
2 transformer windings.

1 8. A power amplifier system as claimed in claim 1, wherein said system includes three
primary transformer windings.

9. A power amplifier system as claimed in claim 1, wherein said system includes four
primary transformer windings.

10. A power amplifier system comprising:

a plurality of m amplifiers, each of which includes a differential input that is commonly
coupled to a system input port, and each of which includes a differential output;

4 a plurality of m primary transformer windings, each of which has substantially the same
5 number N of windings, and each of which is coupled to the differential output of one of the
6 plurality of amplifiers; and

7 a single secondary transformer winding that is inductively coupled to all of said primary
8 transformer windings such that the turns ratio from each primary transformer winding to the
9 secondary transformer winding is $N:1$.

1 11. A power amplifier system as claimed in claim 10, wherein the current provided by each
2 amplifier is $i_1 = i_2 / (mN)$ where i_2 is the current in the secondary transformer winding.

1 12. A power amplifier system comprising:
2 a plurality of m primary transformer windings, each of which has substantially the same
3 number N of windings; and
4 a single secondary transformer winding that is inductively coupled to all of said primary
5 transformer windings such that the turns ratio from each primary transformer winding to the
secondary transformer winding is $N:1$.

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13. A power amplifier system as claimed in claim 12, wherein the current provided to each
primary transformer winding is $i_1 = i_2 / (mN)$ where i_2 is the current in the secondary
transformer winding.

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14. A power transformer system as claimed in claim 12, wherein said plurality of primary
transformer windings are spatially distributed on a circuit board to reduce localized heating on
the circuit board.

1 15. A power transformer system as claimed in claim 12, wherein said system further
2 includes a plurality of amplifiers, each of which is coupled to one of the plurality of primary
3 transformer windings.

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